Amendments to the Claims

Applicants amend claims 39, 42, 48-51, 55, 58, 59, 63-65, 67, 69, 70-72, 75, 76, 79; cancel claim 68; and provide new claim 80. Thus claims 38-67 and 69-80 remain pending upon entry of the present Response to Restriction Requirement. Provided below is a listing of claims for the convenience of the Examiner showing amendments and claim status.

Listing of Claims

1-37 (Canceled)

38. (Previously presented) A transformed bryophyte cell that comprises i) a dysfunctional fucosyl transferase nucleotide sequence and ii) a dysfunctional xylosyl transferase nucleotide sequence.

39. (Currently amended) A transformed bryophyte cell according to claim 38, wherein the ~~said~~ cell further comprises a nucleotide sequence operably linked to an exogenous promoter that drives expression in the ~~said~~ bryophyte cell, wherein said nucleotide sequence encodes a glycosylated polypeptide that is expressed in the bryophyte cell.

40. (Previously presented) A transformed bryophyte cell according to claim 39, wherein said glycosylated polypeptide comprises animal glycosylation patterns.

41. (Previously presented) A transformed bryophyte cell according to claim 40, wherein said glycosylated polypeptide comprises mammalian glycosylation patterns.

42. (Currently amended) A transformed bryophyte cell according to claim 38, further comprising a nucleotide sequence operably linked to an exogenous promoter that drives expression in the ~~said~~ bryophyte cell, wherein said nucleotide sequence encodes a functional mammalian galactosyl transferase that is expressed in the bryophyte cell.

43. (Previously presented) A transformed bryophyte cell according to claim 42, wherein the mammalian galactosyl transferase that is expressed is a beta-1,4 galT.

44. (Previously presented) A transformed bryophyte cell according to claim 43, wherein the mammalian galactosyl transferase that is expressed is a human beta 1,4 ga1T.

45. (Previously presented) A bryophyte cell according to claim 38, wherein the bryophyte cell is selected from species of the genera Physcomitrella, Funaria, Sphagnum, Ceratodon, Marchantia and Sphaerocarpos.

46. (Previously presented) A bryophyte cell according to claim 45, wherein the bryophyte cell is selected from Physcomitrella.

47. (Previously presented) A bryophyte cell according to claim 46, wherein the bryophyte cell is from Physcomitrella patens.

48. (Currently amended) A bryophyte cell according to claim 39, wherein the ~~mammalian~~ glycosylated polypeptide is selected from the group ~~comprising~~ consisting of a polypeptide having a primary amino acid sequence of a human glycosylated polypeptide, a primary amino acid sequence of a non-human mammalian glycosylated protein, ~~and/or~~ a primary amino acid sequence of an antibody or an active fragment thereof, and a primary amino acid sequence of a non-mammalian glycosylated polypeptide.

49. (Currently amended) A bryophyte cell according to claim 48, wherein the ~~mammalian~~ glycosylated polypeptide is a human polypeptide.

50. (Currently amended) A bryophyte cell according to claim 48, wherein the ~~mammalian~~ glycosylated polypeptide is selected from the group consisting of human insulin, preproinsulin, VEGF, proinsulin, glucagon, interferons such as alpha-interferon, beta-interferon, gamma-interferon, blood-clotting factors selected from Factor VII, VIII, IX, X, XI, and XII, fertility hormones including luteinising hormone, follicle stimulating hormone, growth factors including epidermal growth factor, platelet-derived growth factor, granulocyte colony stimulating factor, prolactin, oxytocin, thyroid stimulating hormone, adrenocorticotropic hormone, calcitonin, parathyroid hormone, somatostatin, erythropoietin (EPO), and enzymes such as beta-glucocerebrosidase, haemoglobin, serum albumin, and collagen.

51. (Currently amended) A method of producing at least a bryophyte cell wherein fucT and xylT activity is substantially reduced, that comprises introducing into the ~~said~~ cell i) a first nucleic acid sequence that is specifically targeted to an endogenous fucosyl transferase nucleotide sequence and ii) introducing into the ~~said~~ cell a second nucleic acid sequence that is specifically targeted to an endogenous xylosyl transferase nucleotide sequence.

52. (Previously presented) A method according to claim 51, wherein the said transformed bryophyte cell further comprises a nucleotide sequence operably linked to an exogenous promoter that drives expression in the said bryophyte cell, wherein said nucleotide sequence encodes a glycosylated polypeptide that is expressed in the bryophyte cell.

53. (Previously presented) A method according to claim 52, wherein said glycosylated polypeptide comprises animal glycosylation patterns.

54. (Previously presented) A method according to claim 53, wherein said glycosylated polypeptide comprises mammalian glycosylation patterns.

55. (Currently amended) A method according to claim 51, further comprising introducing into the ~~said~~ cell an isolated nucleic acid sequence that comprises a nucleic acid operably linked to an exogenous promoter that drives expression in a bryophyte cell, wherein said nucleic acid encodes a functional mammalian galactosyl transferase polypeptide.

56. (Previously presented) A method according to claim 55, wherein the galactosyl transferase nucleotide sequence is a beta-1,4 galactosyl transferase (beta-1,4 ga1T) nucleotide sequence.

57. (Previously presented) A method according to claim 56, wherein the galactosyl transferase nucleotide sequence is a human beta-1,4 galactosyl transferase (beta-1,4 galT) nucleotide sequence.

58. (Currently amended) A method according to claim 52, wherein the ~~mammalian~~ glycosylated polypeptide is selected from the group ~~comprising~~ consisting of a protein having a primary amino acid sequence of a human protein, a primary amino acid sequence of a non-human mammalian protein, ~~and/or~~ a primary amino acid sequence of an antibody or an active fragment thereof, and a primary amino acid sequence of a non-mammalian protein.

59. (Currently amended) A method according to claim 52, wherein the glycosylated polypeptide is selected from the group consisting of human insulin, preproinsulin, VEGF, proinsulin, glucagon, interferons such as alpha-interferon, beta-interferon, gamma-interferon, blood-clotting factors selected from Factor VII, VIII, IX, X, XI, and XII, fertility hormones including luteinising hormone, follicle stimulating hormone, growth factors including epidermal growth factor, platelet-derived growth factor, granulocyte colony stimulating factor, prolactin, oxytocin, thyroid stimulating hormone, adrenocorticotropic hormone, calcitonin, parathyroid hormone, somatostatin, erythropoietin (EPO), and enzymes such as beta-glucocerebrosidase, haemoglobin, serum albumin, collagen, and human and non-human proteins selected from amidases, amylases, carbohydrases, cellulase, dextranase, esterases, glucanases, glucoamylase, lactase, lipases, pepsin, peptidases, phytases, proteases, pectinases,

casein, whey proteins, soya proteins, gluten and egg albumin.

60. (Previously presented) A method according to claim 51, wherein the bryophyte cell is selected from species of the genera Physcomitrella, Funaria, Sphagnum, Ceratodon, Marchantia and Sphaerocarpos.

61. (Previously presented) A method according to claim 60, wherein the bryophyte cell is selected from Physcomitrella.

62. (Previously presented) A method according to claim 61, wherein the bryophyte cell is from Physcomitrella patens.

63. (Currently amended) A method according to claim 52, wherein the ~~mammalian~~ glycosylated polypeptide is selected from the group consisting of ~~comprising~~ a polypeptide having a primary amino acid sequence of a human glycosylated polypeptide, a primary amino acid sequence of a nonhuman mammalian glycosylated protein, ~~and/or~~ a primary amino acid sequence of an antibody or an active fragment thereof, and a primary amino acid sequence of a non-mammalian glycosylated polypeptide.

64. (Currently amended) A method according to claim 63, wherein the ~~mammalian~~ glycosylated polypeptide is a human polypeptide.

65. (Currently amended) A method according to claim [[43]] 63, wherein the ~~mammalian~~ glycosylated polypeptide is selected from the group consisting of human insulin, preproinsulin, VEGF, proinsulin, glucagon, interferons such as alpha-interferon, beta-interferon, gamma-interferon, blood-clotting factors selected from Factor VII, VIII, IX, X, XI and XII, fertility hormones including luteinising hormone, follicle stimulating hormone, growth factors including epidermal growth factor, platelet-derived growth factor, granulocyte colony stimulating factor, prolactin, oxytocin, thyroid stimulating hormone, adrenocorticotropic hormone, calcitonin,

parathyroid hormone, somatostatin, erythropoietin (EPO), and enzymes such as ~~betaglucococarebrosidase~~ betaglucocerebrosidase, haemoglobin, serum albumin, and collagen.

66. (Previously presented) A method according to claim 52, wherein the exogenous promoter is selected from inducible, chemical-regulated, constitutive or cell specific promoters.

67. (Currently amended) A set of nucleic acid vectors suitable for producing at least a transformed bryophyte cell ~~wherein~~ that comprises i) a dysfunctional fucosyl transferase nucleotide sequence and ii) a dysfunctional xylosyl transferase nucleotide sequence ~~sequences are dysfunctional,~~ wherein said set of nucleic acid vectors comprises i) a first nucleic acid sequence that is specifically targeted to an endogenous fucosyl transferase nucleotide sequence and ii) a second nucleic acid sequence that is specifically targeted to an endogenous xylosyl transferase nucleotide sequence.

68. (Canceled)

69. (Currently amended) A set of nucleic acid vectors according to claim 67 ~~suitable for producing at least a bryophyte cell wherein fucosyl and xylosyl transferase nucleotide sequences are dysfunctional~~, further including [[:]] a polynucleotide that encodes a glycosylated polypeptide. ~~functional mammalian glycosyl transferase suitable for use in a method of producing at least a bryophyte cell wherein fucT and xylT activity is substantially reduced, that comprises introducing into the said cell i) a first nucleic acid sequence that is specifically targeted to an endogenous fucosyl transferase nucleotide sequence and ii) introducing into the said cell a second nucleic acid sequence that is specifically targeted to an endogenous xylosyl transferase nucleotide sequence;~~

~~wherein the said transformed bryophyte cell further comprises a nucleotide sequence operably linked to an exogenous promoter that drives expression in the said bryophyte cell, wherein said nucleotide sequence encodes a glycosylated polypeptide that is expressed in the bryophyte cell.~~

70. (Currently amended) A set of nucleic acid vectors according to claim [[69]] 67, ~~wherein said~~ further including a polynucleotide that encodes a ~~recombinant~~ functional mammalian galactosyl transferase for use in a method of producing at least a bryophyte cell wherein fucT and xylT activity is substantially reduced, that comprises introducing into said cell i) a first nucleic acid sequence that is specifically targeted to an endogenous fucosyl transferase nucleotide sequence and ii) introducing into said cell a second nucleic acid sequence that is specifically targeted to an endogenous xylosyl transferase nucleotide sequence.

71. (Currently amended) A set of nucleic acid vectors according to claim 70, wherein said polynucleotide encodes a ~~recombinant human beta-1,4~~ mammalian galactosyl transferase.

72. (Currently amended) A host cell containing [[a]] the set of nucleic acid vectors according to claim 67.

73. (Previously presented) A host cell according to claim 72 which is a bryophyte cell.

74. (Previously presented) A host cell according to claim 72 which is a prokaryote cell.

75. (Currently amended) A method of producing a host cell according to claim 72, the method including incorporating said set of nucleic acid vectors into the cell by means of transformation.

76. (Currently amended) Use of [[a]] the set of nucleic acid vectors according to claim 67 in the production of a transgenic bryophyte cell.

77. (Previously presented) A host cell according to claim 72 which is comprised in a bryophyte, or a bryophyte part, or an extract or derivative of a bryophyte or in a bryophyte cell culture.

78. (Previously presented) A bryophyte plant or bryophyte tissue comprising a bryophyte cell according to claim 38.

79. (Currently amended) A method of producing a bryophyte plant, the method including incorporating [[a]] the set of nucleic acid vectors according to claim 67 into a bryophyte cell and regenerating a bryophyte from said cell.

80. (Newly presented) A set of nucleic acid vectors according to claim 71, wherein said polynucleotide encodes a human beta-1,4 galactosyl transferase.